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have as a rule been conducted from a laboratory standpoint, and have left unanswered the question of the slow action of these substances under natural conditions. From a study of the effects resulting to vegetation along the tarred roads in some of the parks of Paris, GATIN²² finds that considerable damage is done to trees and other plants by the tar-laden dust particles; accordingly the injury is less severe along the less frequented roads. A peculiarity of the injury is that it develops very gradually, and in case of the trees did not appear until the practice of surfacing the roads with tar had been continued for two years. Dust collected from tarred roads and dusted at frequent intervals on nursery stock produced characteristic injury, consisting of spotting and browning of the leaves and retardation of growth.—H. HASSELBRING.

Cystidia as hydathodes.—As a result of a critical examination of the cystidia occurring in the hymenium and similar cystidia-like trichomes often found distributed over other surfaces of the fruit bodies of Hymenomycetes, KNOLL²³ concludes that, with the exception of certain special types like the large cystidia of some species of *Coprinus*, these two sets of trichomes belong in a physiological-anatomical sense to the same category of organs, and that they function exclusively as hydathodes. KNOLL finds that the exudation of water is restricted to a definite region, with few exceptions, situated at the apex of the trichome. The cell wall at this point is capable of swelling to such an extent that it forms a colloidal solution in the excreted water. That the drops adhering to the ends of the hydathodes consist of a colloidal solution is shown by the gelatinous residue left when the drops are allowed to evaporate on a glass slide, and also by the fact that a membrane is precipitated when the cystidium with the attached drop is immersed in alcohol. Crystals are often deposited on the ends of the hydathodes as a result of evaporation of the liquid.—H. HASSELBRING.

Plant diseases of Texas.—A survey of the plant diseases occurring within a radius of 100 miles of San Antonio, Texas, has been published by HEALD and WOLF.²⁴ The paper is based on collections made by the writers during a period of about two years, from 1908 to 1910. It comprises a list of fungi collected on about 200 species of hosts within the region examined, together with brief descriptions of the fungi and notes on the effects produced on the hosts. A number of well executed plates accompany the text; however, the motive that

²² GATIN, C. L., Die gegen die Abnutzung und den Staub der Strassen angewendeten Verfahren und ihre Wirkung auf die Vegetation. Zeitschr. Pflanzenkrank. 22:193-204. 1912.

²³ KNOLL, F., Untersuchungen über den Bau und die Funktion der Cystidien und verwandter Organe. Jahrb. Wiss. Bot. 50:453-501. figs. 69. 1912.

²⁴ HEALD, F. D., and WOLF, F. A., A plant disease survey in the vicinity of San Antonio, Texas. Bur. Plant Ind. Bull. 226. pp. 112. figs. 2. pls. 19. 1912.

guided the writers in their selection of material for illustration is not clear. As a list of parasitic fungi from a region where little systematic collection has been carried on, this paper is a useful contribution. Its usefulness might have been greatly enhanced if the authors had indicated what part of their material constituted additions to the known fungus flora of Texas, and what part represented species formerly known from that region, for it can scarcely be doubted that so extensive a collection of material contains much that is new to the region.—H. HASSELBRING.

A new type of Cycadofilicales.—From a study of numerous casts, SCHUSTER²⁵ has described the staminate and ovulate flowers of *Schuetzia anomala* and has drawn some conclusions in regard to the position of the genus. The impressions of the staminate flowers were so numerous that it was not difficult to make reconstructions. The flower consists of 12–20 cyclic sporophylls united throughout the lower two-thirds of their length and bearing sporangia upon their inner surfaces, resembling SELLARD's *Codonotheca* and STUR's *Calymmatotheca*. The flowers are in a spicate inflorescence. The longitudinally striated "seeds" described by GOEPPERT are regarded as megasporophylls, and it is important to note that these megasporophylls are in undoubted connection with twigs bearing conifer-like leaves. On account of this association, SCHUSTER would make *Schuetzia* the type of a new group of Cycadofilicales, characterized by the conifer-like leaves.—CHARLES J. CHAMBERLAIN.

Root nodules of Podocarpineae.—Miss SPRATT²⁶ has found that root nodules are present in *Podocarpus*, *Microcachrys*, *Dacrydium*, *Saxegothaea*, and *Phyllocladus*, being modified lateral roots. A root-hair is penetrated by *Pseudomonas radicola* (a nitrogen-fixing organism) and from thence enters the cortex. In all cases the nodules are produced by the infection of the meristematic tissue of the young lateral root before it emerges from the cortex of the parent root. Many interesting observations are made upon the stages of the bacteria and also upon the condition of the tissues of the host. The conclusion is suggested that the morphology of the nodules favors the view that *Podocarpus* and *Saxegothaea* "are the most widely divergent of the genera in the Podocarpineae, and that they are connected through *Microcachrys* and *Dacrydium*." The presence of the nodules in *Phyllocladus* is also further confirmation that the genus is related to the podocarps rather than to the taxads.—J. M. C.

²⁵ SCHUSTER, J., Über die Fruktification von *Schuetzia anomala*. Sitzungsber. Kaiserl. Akad. Wiss. Wien 120:1125–1134. pls. 1, 2. 1911.

²⁶ SPRATT, ETHEL ROSE, The formation and physiological significance of root nodules in the Podocarpineae. Ann. Botany 26:801–814. pls. 77–80. 1912.